

ABSTRACTFILTER BASED AUTHORIZING TOOL

A desktop personal computer 410 is provided with a system for building custom applications. A set of filters 3 is assembled by the user in an operating environment 4 by selection from a library 5 of available filters, each filter performing a respective processing task on data objects which may be input from a data memory 6. An output of the system is processed by a user interface controller 10 for display on a display screen 20 in which data is displayed in a data display area 21, the sequence of filters being represented graphically by a stack of filter boxes 24 in a filter display window 23, and the selection of filters from the library 5 being facilitated by a filter selector window 25. Each of the filters is controllable by the user interface provided within a respective filter box 24, data and user interface description objects being communicated by respective channels 811 and 88 connecting the filters in sequence. Some filters have the facility to amend the user interface component of other preceding filters in the sequence. A help filter may be included in the sequence to generate a help object which, when displayed, provides help information to the user. A further control channel 321 enables some filters to be bidirectional

5     The system enables a user to construct customised programming applications from reusable processing elements in order to perform a wide variety of tasks commonly performed by personal computers.

Figure 1 illustrates the steps of the proposed algorithm for finding a minimum spanning tree. The process starts with a graph with 6 nodes and 7 edges. The algorithm proceeds by selecting edges in increasing order of weight, rejecting those that would either create a cycle or result in a vertex with a degree greater than 2. The steps are as follows:

- (a) Initial graph with 6 nodes and 7 edges.
- (b) Select edge (1,2) with weight 1.
- (c) Select edge (2,3) with weight 1.
- (d) Select edge (3,4) with weight 1.
- (e) Select edge (4,5) with weight 1.
- (f) Select edge (5,6) with weight 1.
- (g) Select edge (1,3) with weight 2.
- (h) Select edge (2,4) with weight 2.
- (i) Select edge (3,5) with weight 2.
- (j) Select edge (4,6) with weight 2.
- (k) Select edge (1,4) with weight 3.
- (l) Final minimum spanning tree with total weight 10.